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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,348	09/11/2003	Zhifeng Ren	2846/2112	5141

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EXAMINER
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MCNEIL, JENNIFER C

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/660,348

Applicant(s)

REN ET AL.

Examiner

Jennifer C. McNeil

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 August 2005.  
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6,8-24 and 55-84 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 1-6,8-24 and 55-67 is/are allowed.  
6) ☒ Claim(s) 68-84 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Allowable Subject Matter*

The indicated allowability of claims 68-84 is withdrawn in view of the newly discovered reference(s) to Xiao et al (US 6,162,530), Webster et al (US 2003/0059742), and Yang et al (US 2004/0131537). Rejections based on the newly cited reference(s) follow.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 68-70, 72-80, and 82-84 are rejected under 35 U.S.C. 102(b) as being anticipated by Xiao et al (US 6,162,530). Xiao teaches nanostructured oxide materials comprising structures such as nanorods or nanofibers which are interengaged as shown in the figures. Regarding claims 69 and 70, the nanomaterial may comprise a doped oxide, such as MgO doped with Co, Fe, or Pt. Regarding claims 74 and 75, the intended use of the material does not structurally define over the prior art. Regarding claims 76-79, the fibers have diameters of less than about 100 nm, and the bird's nest morphology as shown in Figure 6 has a diameter of about 10 microns. Also, the fibers may have a length of approximately 0.5 microns. Regarding the angles and manner in which the nanostructures are oriented, the figures give multiple examples of angles and orientations.

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Claims 80, and 82-84 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al (US 6,863,943). Wang teaches semiconducting oxide nanostructures comprising a plurality of helical nanostructures formed from metal oxides, and as shown in the figures, the structures are interconnected and form a material or network. Some nanostructures are shown to be parallel to one another, while others are distributed at angles.

Claims 80, and 82 are rejected under 35 U.S.C. 102(e) as being anticipated by Yang et al (US 2004/0131537). Yang teaches a nanotape comprising multiple metal oxide nanoribbons aligned parallel to one another. The tape is considered a network.

Claim 80 is rejected under 35 U.S.C. 102(e) as being anticipated by Webster et al (US 2003/0059742). Webster teaches a metal oxide nanofiber material wherein the fibers are interconnected to form a material or network.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 71, and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xiao et al (US 6,162,530). Xiao teaches a nanostructured material as discussed above, but does not specify Ge or Sn dopants, or a pore size within the claimed range. Xiao does teach multiple oxides and multiple dopants that may be used as the nanostructure material. It would have been obvious to one of ordinary skill in the

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art at the time of the invention to select a known material on the basis of its suitability for the intended use as a matter of obvious engineering choice (*In re Leshin*, 125 USPQ 416).

Xiao teaches the material may have a porosity of 2-20 nm. Absent a showing of unexpected results, one of ordinary skill in the art would have found it obvious to adjust the porosity of the material dependant upon the intended use.

*Allowable Subject Matter*

Claims 1-6, 8-24, and 55-67 are allowed.

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer C. McNeil whose telephone number is 571-272-1540. The examiner can normally be reached on 9AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jennifer McNeil  
October 15, 2005